

Hand Surgery in Indonesia

Oryza Satria¹, Pramono Ari Wibowo², Rizal Chaidir³, Heri Suroto²

¹ Consultant of Orthopaedics and Traumatology Department, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia: *Fatmawati General Hospital*

² Consultant of Orthopaedics and Traumatology Department, Faculty of Medicine Airlangga University, Sutomo General Hospital

³ Consultant of Orthopaedics and Traumatology Department, Faculty of Medicine Padjajaran University, Hasan Sadikin General Hospital

Abstract

The history of hand surgery in Indonesia began with the growing interest in performing a complicated hand surgery. Since 1970s hand surgery in Indonesia has made headway, especially when it comes to science and education. The development of hand surgery in Indonesia is not limited to a microsurgery area, but also covers more modern techniques, including reconstruction, minimal invasive surgery, arthroscopy, and various kinds of innovations and developments to overcome the high cost of health, especially medical devices in Indonesia. Voluntary visitations to help or take surgery procedures in many remote areas in Indonesia, such as Papua and Nusa Tenggara have also contributed to the development of hand surgery. Currently, hand surgery in Indonesia is improving and growing significantly.

Keywords Hand Surgery, Indonesia, Innovation, Development

Early History

The history of hand surgery in Indonesia began with the growing interest in performing a complicated hand surgery shown by a handful of orthopedic and plastic surgeons from different cities in 1970s.

The pioneering orthopedic surgeons included Prof. Chehab Rukni Hilmy from Jakarta, Prof. Djoko Roeshadi from Surabaya, and Prof. Ahmad Djojosingito from Bandung; while, the plastic surgeons were dr. Bisono and dr. Sidik Setiamihardja.



Fig 1: (from left to right) Prof. Djoko Roeshadi, Prof. Chehab Rukni Hilmy, Prof. Ahmad Djojosingito.

They saw the importance of collaboration with respect to hand surgery and agreed to establish HIPITA (*Himpunan Indonesia Untuk Pengembangan Ilmu Bedah Tangan or Indonesian Association for Hand Surgery Science Development*) in 1979. Prof. Djoko Roeshadi chaired HIPITA from its inception until 2005. It was the first interest group in Indonesia to include orthopaedic surgeons, plastic surgeons, and physiatrists.

Since the establishment of HIPITA, the science of hand surgery has continued to develop, which drove the emergence of other pioneers, including dr. Syaiful Anwar Hadi, dr. Agung Sutiyoso, and dr. Lukman Shebubakar from Jakarta; dr. M. Rizal Chaidir and dr. Nucki Nursjamsi from Bandung and dr. Erwin Ramawan and dr. Heri Suroto from Surabaya. They agreed to establish an association of hand surgery chaired by Prof. Djoko Roeshadi. The association was inaugurated in Surabaya, East Java.

Meanwhile, some previous events have formed the basis for hand surgery development in Indonesia. A foreign hand surgery specialist, who visited Indonesia in 1990s, revealed the country's lack of competent hand surgeons and the existing hand surgeons in Indonesia need to gain equality in terms of hand surgery competency. The absence of competence certification was cited as the reason behind the country's unequal hand surgery competency as revealed by

Orthopedic collegium responsible for handling the competency issue at the request of the Consortium Health Science (CHS). Therefore, Orthopedic collegium viewed that hand surgery education was of paramount importance to engender hand surgery consultant. This was further encouraged and substantiated by Prof. Djoko Roeshadi, chairman of the orthopaedic collegium, and Dr. M. Rizal Chaidir, secretary of the orthopaedic collegium.

In 1990s, a hand surgery education was established by Prof. Djoko Roeshadi and his staff, namely dr. Erwin Ramawan, dr. Heri Suroto, dr. M. Rizal Chaidir, dr. Syaiful Anwar Hadi, and dr. Lukman Shebubakar.

The history and development of hand surgery was also influenced considerably by other factors including working safety in industry, and the increased cases of sharp weapon using crimes and local culture, especially a large *celurit* (traditional machete) fight, known as a *Carok* in Madura.

Back in 1980s, the majority hand surgeries in Surabaya, the important city in development of hand surgery in Indonesia, were attributed to the increased crimes using sharp weapons that caused the cutting of body organs, which required replantation. A study has found that a survival rate of *Carok's* victims reached 75 percent at that time. In 1990s,

Suroto. In Palembang, the leprosy hand surgery was performed by dr. Syaiful Anwar Hadi. Currently, the number of leprosy patients has reportedly shown a declining trend.

In developing hand surgery, Indonesia collaborated with hand surgery experts from other countries, such as Prof. Robert Pho from Singapore and Prof. Teoh Lam Chuan, also from Singapore. Dr. Peni Kusumastuti in Jakarta, who developed medical rehabilitation in the area of hand surgery in Indonesia, was the former students of Prof. Teoh Lam Chuan. The other medical rehabilitation doctors / physiatrist, dr. Ratna D. Soebadi and dr. Indrayuni Lukitra Wardhani in Surabaya, also played important role in development of hand surgery rehabilitation in Indonesia.

In the historical journey of hand surgery in Indonesia, Prof. Djoko Roeshadi and Prof. Chehab Rukni Hilmy, the late, are among the names that stand out for their contributing role they played in developing orthopedic surgery, especially with respect to education and science.

Prof. Djoko Roeshadi, an orthopedic surgeon, regarded as one of Indonesia's leading pioneers in hand surgery, specialized in hand surgery and taught rigorous techniques to his orthopedic surgery colleagues and trainees.



Fig 2. A team of hand surgeons and fellows participate in an orthopaedic outreach program in (a,b) a leprosy hospital in Singkawang, West Borneo, and (c) Papua, Indonesia's easternmost province.

the increased number of motor accidents changed the case pattern, with cases of brachial plexus injury on the rise.

Another development of hand surgery was how leprosy hospitals performed the surgery of leprosy, which in those days, was still rampant. The leprosy hospitals included Sumber Glagah Mojokerto Hospital and Kediri Hospital with hand surgery performed by Prof. Djoko Roeshadi and dr. Heri

He collaborated with other pioneers, including top plastic surgeons dr. Bisono and dr. Sidik Setiamihardja, as well as Prof. Chehab R. Hilmy and Prof. Ahmad Djojosingito, to create hand surgery.

In 1981, he was the first in Indonesia to do finger replantation, hand amputations, and toe to finger transplanting and also the first in Indonesia to organize a

microsurgery workshop in Malang, East Java in 1985. The one-week training was supported by 40 electronic microscopes brought straight from the Netherlands by the Foundation. By doing so, he demonstrated his charitable goal to bring together all experts engaged in hand surgery to enhance sensitive surgical abilities.

During his term as chairman of HIPITA, he struggled to raise funds to travel to international congresses of the APFSSH and IFSSH to represent his country during the "long-dormant period" when the Society had no active scientific meetings. It was also due to the efforts of dr. Erwin Ramawan as the last chairman of HIPITA and the first chairman of the subsequent Indonesian upper limb and microsurgery association, PERAMOI, that Indonesia held the 9th Congress of the Asian Pacific Federation Societies for Surgery of the Hand (APFSSH) in conjunction with the 5th Congress of the Asian Pacific Federation Societies for Hand Therapy (APFSHT) in Bali, Indonesia in 2012. This was the prestigious annual scientific meeting for hand surgeons, hand therapists, and other physicians interested in the therapy of hand injury, trauma, congenital, and other hand problems in Asia. There were around 1,000 participants from around the world during the meeting.

During his term, members such as dr. M. Rizal Chaidir, dr. Erwin Ramawan, dr. Lukman Shebubakar, dr. Syaiful Anwar Hadi, dr. Heri Suroto, and others served as national delegates at APFSSH meetings, such as in Perth, Australia, in 1997; Chennai, India, in 2000; Seoul, South Korea, in 2002; Kaohsiung, Taiwan, in 2009; and Kuala Lumpur, Malaysia, in 2014.



Fig 3. 2012 APFSSH Congress, Grand Hyatt Hotel, Nusa Dua, Bali, Indonesia. (Left to Right) Erwin Ramawan, Bruce Conolly, Sue Shaw, Bramantya Karna, Desmond Soares, Heri Suroto, Agus Roy Hamid, Thomas Erwin

Prof. Chehab Rukni Hilmy was one among the first to advocate that those working on hand cases learn the science of hand surgery. He was also instrumental in establishing Sports Medicine in Indonesia, particularly at the University of Indonesia in Jakarta. Through partnerships with international orthopedic surgeons, he represented the country at international meetings.

Recent Development and Advances

Since 1970s hand surgery in Indonesia has made headway, especially when it comes to science and education, following the establishment of PERAMOI or Indonesian Upper Limb and Micro-reconstructive Surgery Association, as part of efforts to further achieve the HIPITA's goals. The acronym PERAMOI was proposed by dr. Syaiful Anwar Hadi. The



Fig 4. The First Peramoi Meeting in Bandung in 2016.

association was founded in Bandung, West Java, on October 26, 2014, by six renowned Indonesian Orthopaedic Hand Surgeons: dr. M. Rizal Chaidir, dr. Lukman Shebubakar, dr. Erwin Ramawan, dr. Nucki dr. Nursjamsi Hidajat, dr. Heri Suroto, and dr. Karuniawan Purwantono.

PERAMOI meets the challenges in the field of reconstructive microsurgery especially in the upper limb by establishing an educational teaching forum for the exchange of ideas in trauma, infection, degenerative conditions, congenital abnormalities, and sports injuries. It hosts a cadaveric workshop for arthroplasty, basic microsurgery, basic osteosynthesis and flap course in conjunction with its annual meeting. Currently, dr. Made Bramantya Karna is the present head and is developing the *Indonesian Journal of Hand, Upper Limb, and Reconstructive Microsurgery*.

PERAMOI also offers the fellowship program and for the first 7 years, it was under the directorship of Prof. Djoko Roeshadi. The leadership baton was then passed to Erwin Ramawan, the current director of fellowship training.

It also assists the IOA in developing and conducting the hand fellowship program. In 2019, its name was changed to Hand, Upper limb, and Microsurgery Fellowship Program to include other regions of the upper extremity besides the hand.

From its inception until now, the fellowship has produced 44 hand surgeons, who were certified by the College of Orthopaedics and Traumatology. Currently, the hand surgeons work in collaboration with Orthopaedic training centers all across Indonesia.

Following its about 50 years of journey and thanks to orthopedic surgeons' never-ending innovation and study principle, hand surgery continues to evolve with increasingly diverse types of hand surgery on offer.

Not only the dedicated work of Prof Djoko Roeshadi, dr. M. Rizal Chaidir, dr. Erwin Ramawan, and dr. Heri Suroto who have put the strong foundation in hand and microsurgery field, it was also dr. Lukman Shebubakar's legacy to encourage the development in service and education of modern hand surgery in Indonesia. Dr. Heri Suroto in Surabaya, Dr. Wahyu Widodo in Jakarta, and Dr. Tito Sumarwoto in Solo have made significant advances in the study and treatment of Brachial Plexus Injuries. Other Development and breakthroughs in understanding and innovation in Internal Fixation, minimally invasive surgery, arthroscopy, sports, and traumatic wrist injuries, joint replacement, wide awake hand surgery, and rehabilitation are some of the advances in hand surgery in Indonesia.

PERAMOI continues to focus on education by providing courses on hands surgery, organizing seminars and workshops on a regular basis. The annual courses also involve foreign hand surgery experts' visitation, including Prof. PC. Ho from Hong Kong and dr. Wichit from Thailand, both in 2016; Prof. Steven Samijo from Netherland in 2016 and 2018; and dr. Kevin Chung and dr. James Chang from the United States in 2018. Thanks to the continued education, the number of hand surgeons is on the rise in line with the growing interest in the field.



Fig 5. Combined Meeting of ASSH, SSHS, and PERAMOI, January 19-21, 2018, Surabaya, Indonesia. (Left to Right Standing): Sandeep Sebastin, Teddy Wardhana, Alphonsus Chong, Anthony Foo, Karuniawan Purwantono. (Left to right seated): Lukman Shebubakar, Rizal Chaidir, Kevin Chung, Ghazi Rayan, James Chang, Erwin Ramawan, David Tan, Jeffrey Greenberg.

Since 2014, several young hand surgeons started to develop hand surgery by studying abroad and put their knowledge of the field they have gained from the study into practice. As a result, the development of hand surgery in Indonesia is not limited to a microsurgery area, but also covers more modern techniques, including fixation techniques, reconstruction, minimal invasive surgery, arthroscopy, and education on the hand condition that people, particularly, patients have often complained about.

Various kinds of innovations and developments to overcome the high cost of health, especially medical devices in Indonesia, particularly in the field of hand and microsurgery, have been carried out successfully, including the development of a machine with a working system such as VAC or NPWT with a machine that is cheaper than the VAC machine which is currently circulating by dr. Meirizal from Yogyakarta and implant arthroplasty for hands by dr. Agung and dr. Thomas from Malang, East Java.

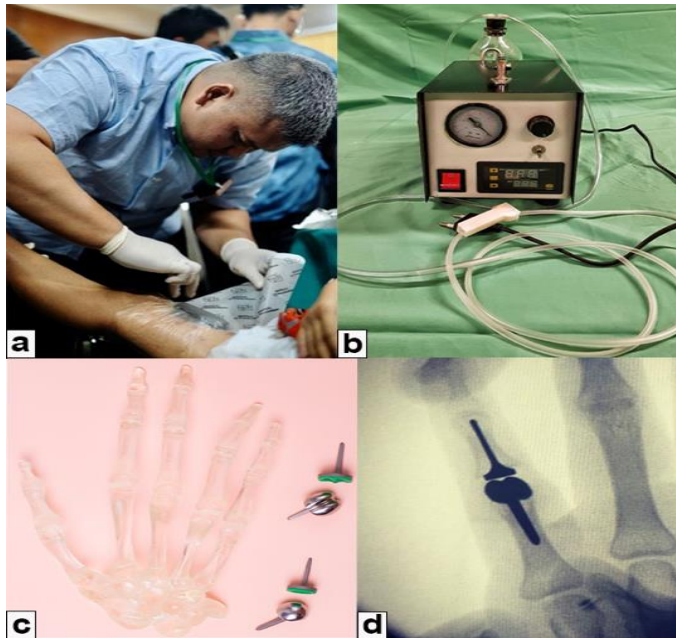


Fig 6. (a,b) Dr. Meirizal from Yogyakarta is using his VAC machine and (c,d) one of the local made metal joint prosthesis designed by dr. Thomas and dr. Agung.

Despite the increased number of hand surgeons in Indonesia, the number is relatively small given the country's big population and high number of cases. Only less than 70 hand surgeons are available to handle patients in all regions across Indonesia, with the inequal spread of the surgeons.

Voluntary visitations to help or take surgery procedures in many areas in Indonesia, such as Papua and Nusa Tenggara have also contributed to the development of hand surgery.

In response to the many injured people brought about by a 6.4 Mw Earthquake that struck Lombok on July 29, 2018 and another 7Mw earthquake and tsunami that hit Palu, Donggala and Sigi in the central Sulawesi province, on October 28 in the same year, PERAMOI and its parent organization, IOA, took immediate actions to coordinate medical relief efforts in both Lombok and Palu.

During the pandemic, PERAMOI, in collaboration with the Indonesia Orthopaedic Association (IOA), is continuing its online scientific activities by inviting other related medical fields, such as physical medicine and rehabilitation, radiology, neurosurgery, plastic surgery, thoracic and cardiovascular surgery, in order to provide the Orthopaedic society and the general public with current information and a refresher course. Prof. Christopher Mathoulin (France), Dr. Sudhir Warriar (India), Prof. Raja Sabapathy (India), Prof. Steven Samijo (Netherlands), dr. Kanchai Malungpaishrope (Thailand), Prof. Jeong Tae Kim (Korea), and Prof. Kazuteru Doi (Japan) are among the speakers.

Some of the photos below show the field hospital at Lombok and the Indonesian Naval hospital ship at Palu.



Fig 7. (a) a PERAMOI hand surgical team (dr. Seti Aji and dr. Yanuar) in Palu, Northwestern Sulawesi, after a devastating Mw 7.5 earthquake and tsunami rocked the town on September 28, 2018. After the first emergency procedures, the team was performing second stage surgery to cover soft tissue defects in some patients. During the operation the aftershock rocked the town and there was an interruption of power during operation, the team performing surgery by using flashlight. (b) Dr. Dheddie, a PERAMOI member, examines a patient at an emergency hospital after an earthquake struck Mamuju and Majene, West Sulawesi, in January 2021.

The PERAMOI's future goals include

- To establish a nationwide high level of treatment for hand diseases and injuries
- To provide high-quality local training in hand and microsurgery
- To volunteer and engage in humanitarian aid in the field of orthopaedics, especially hand surgery
- To assist, stimulate, and facilitate the growth of hand therapist training and learning groups on a national and worldwide scale.
- To establish and maintain stronger international connections in the subspecialty
- To conduct more high quality and applicable research
- To participate and be present at all international conferences as well as journals